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#### THE LIFE-CYCLE IN HYPOTRICHOUS INFUSORIA.

Baitsell (J. Exp. Zool. Feb. 1914) has undertaken to determine whether culture conditions could be found for *Oxytricha* and *Pleurotricha* that would eliminate the so-called life-cycle, which assumes the necessity of conjugation to prevent senescence and death as the result of continued division. He concludes that the dying out of some cultures was due, not to a condition of inherent senescence but to the fact that the culture conditions were not entirely favorable. He found that "sister cells" of *Oxytricha* lived twice as long in mass cultures without conjugation as when bred in daily isolation cultures. In *Pleurotricha* he has found culture conditions in which the organism will apparently live indefinitely without conjugation or artificial stimulation,—as Woodruff has earlier found for *Paramecium*.

In the same journal Woodruff has a note showing that his race of *Paramecium* which had gone for 4102 generations without tendency to conjugate presented numerous conjugating pairs. This disposes of the idea that *non-conjugating* races of *Paramecium* have been isolated.

#### PEARL FORMATION.

Fr. Alverdes (Zeits. Wiss. Zool. CV., 1913, p. 598) discusses the formation and structure of pearls in several pearl-bearing mollusks. The pearl forming layer is ectodermal, but the origin of the sac is uncertain. By inserting ectoderm cells in the mantle tissues sacs similar to the usual pearl-sacs were formed, and in these the pearly layers were deposited. The author found that pearls may or may not have a central foreign body or nucleus. The pearl may be laid down around a parasite, an ovum, or a fragment of inorganic matter. These foreign bodies may produce a kind of pseudo-sac in which the pearl may be laid down in concentric layers.

#### REGENERATION OF NERVES.

Clark (Jour. Comp. Neur. Feb. 1914) attacks in a new way the questions clustering about degenerating and regenerating nerves.

Fowls by prolonged feeding with polished rice undergo progressive degeneration of medullated nerve fibres. This shows as progressive paralysis. These nerves regenerate with adequate diet. The nerve fibres are intact during the whole time; there are no wounds or inflammations; and no inwandering fibres from other nerves. The writer secured degeneration and regeneration without any trace of multiplication of the nuclei of the neurilemma sheath which has been interpreted by many to mean the formation of embryonic nerve fibres and auto-regeneration.

By prolonging the degenerative process the writer secured instances of multiplication of the nuclei in sheath. He believes that the so called embryonic fibres are degenerative phenomena, and not regenerative. In total absence of "embryonic nerve fibres" new axis cylinders grew peripherally down the old medullary sheath, passing alongside remnants of the old axis within the sheath.

#### BEHAVIOR OF NUCLEUS IN CRYSTAL-FORMATION.

Samuels (Compt. Rend. CLVI, 1913, p. 1275) gives an account of his studies of the behavior of cells in the bracts of *Anthurium* during the formation of crystals. Two kinds of crystals are present: polyhedral crystals which are abundant in the outer cells, and raphides which are found more sparingly and in the deeper cells. In the case of the polyhedral crystals the nucleus retreats to one side of the cell in the densest protoplasm. Striations later pass from the nucleus to the crystals. When the crystals are formed the nucleus is destroyed. A similar fate awaits the nuclei of cells in which the raphides form. In this case however several cells may lose their walls and their nuclei fuse into one. From this the raphides diverge.

#### ENTOMOLOGICAL NOTES.

*A new family of Orthoptera.*—Walker ('14, Can. Ent., 46:93-99) reports the finding of specimens on Sulphur Mountain, Banff, Alberta, which represent a new family of the order Orthoptera. The insects are placed without hesitancy in this order since the characters of the mouth-parts, cervical and thoracic sclerites, and ovipositor are distinctly orthopteran. They are wingless, thysanuriform insects of a very generalized type and the discovery of these